

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Gulf Chemical & Metallurgical Corporation
Facility Address: 302 Midway Road, Freeport, TX 77541
Facility EPA ID #: TXD074195678

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes - check here and continue with #2 below.

 If no - re-evaluate existing data, or

 If data are not available skip to #6 and enter "IN" (more information needed) status code.

The following reports were submitted to the Texas Commission on Environmental Quality (TCEQ), or its predecessor agency, and were utilized for this EI determination:

- Environmental Resources Management Southwest (ERM- Southwest) February 11, 1999. *Phase III RCRA Facility Investigation Report*;
- ERM-Southwest. August 14, 2000. *Addendum to the Phase III RCRA Facility Investigation Report*;
- ERM-Southwest. March 13, 2001. *Affected Property Assessment Report*; and
- ERM-Southwest. May 25, 2004. *Transmittal of Response to TCEQ Comments and Replacement Pages for the Affected Property Assessment Report*.

Note that available data and information collected to date for the following SWMUs were utilized for RCRA Corrective Action evaluation following TRRP (30 TAC §350):

- Former Outfall No. 2 Drainage Ditch (SWMU A);
- Active Catalyst Storage Area (SWMU 05);
- Pond No. 1 (SWMU 01); and
- Pond No. 2 (SWMU 02).

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated**"¹ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater		X		No exceedances of applicable regulatory levels.
Air (indoors) ²		X		Exposure point concentrations are not likely to be elevated, as volatile constituents are not apparent beneath buildings.
Surface Soil (e.g., <2 ft)	X			<p>Reported exceedance of Tier 1 Protective Concentration Levels (PCLs) in surface soil (promulgated under TRRP) include:</p> <ul style="list-style-type: none"> - Arsenic exceeded its residential (Res) PCL south of SWMU 01 and in an area near boring B-7 along SWMU A. - Lead exceeded its Res and commercial/industrial (C/I) PCL (both values are the same) south of SWMU 01. - Nickel exceeded Res PCL south of SWMU 01 and in an area near boring B-7 along SWMU A. - Nickel exceeded its C/I PCL in an area near boring B-18 along SWMU 05. - Molybdenum exceeded its Res PCL throughout the central portion of the facility. - Molybdenum exceeded its C/I PCL in an area between borings B-15 and B-16 south of SWMU 01. - Vanadium exceeded its Res PCL in several areas around the central portion of the facility near each SWMU. - Vanadium exceeded its C/I PCL in an area near boring B-43 south of SWMU 01.
Surface Water		X		None Present.
Sediment		X		None Present.
Subsurface Soils (<2 ft.)	X			<p>Reported exceedance of Tier 1 PCLs in subsurface soil (promulgated under TRRP) include:</p> <ul style="list-style-type: none"> - Lead exceeded its Res and C/I PCL south of SWMU 01 and in an area near boring B-38.

				- Molybdenum exceeded its Res PCL in two areas: south of SWMU 01 (B-38) and along SWMU A (B-17).
Air (outdoor)		X		

_____ If no (for all media) - skip to #6, and enter "YE" status code after providing or citing appropriate "levels" and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Medium	SWMUs	Key Contaminants, Levels - Reported Concentrations, and Levels - Protective Concentration Levels (PCLs)
Surface Soil		APAR Worksheet 5.0 (March 13, 2001) Attachment 5B of the APAR addendum - Figures 5B-1 through 5B-4 (May 25, 2004) Attachment 5A of the APAR addendum - Tables 5A-1 and 5A-2 (May 25, 2004)
Subsurface Soil		APAR Worksheet 5.0 (March 13, 2001) Attachment 5C of the APAR addendum - Figure 5C-1 (May 25, 2004) Attachment 5A of the APAR addendum - Table 5A-3 (May 25, 2004)

Footnotes:

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

"Contaminated" Media	Potential Human Receptors (Under Current Conditions)						
	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	---	---	---	---			---
Air (indoors)	---	---	---				
Soil (surface, e.g., <2 ft)	No	No	No	No	No	No	No
Surface Water	---	---			---	---	---
Sediment	---	---			---	---	---
Soil (subsurface, e.g., >2 ft)				No			No
Air (outdoors)	---	---	---	---	---		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- _____ If yes (pathways are complete for any "contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.
- _____ If unknown (for any "contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

- *There were no reported exceedances of Tier 1 PCLs for residential land use in surface soil along the north, east, and south property boundaries and to the west of the adjacent, off-site railroad right-of-way (which is also zoned as industrial land use).*

- *Exceedances of Tier 1 PCLs for commercial/industrial land use in surface soil were reported for nickel, molybdenum, and vanadium in several small locations within the operating areas where potential for exposure is controlled.*
- *The maximum reported concentrations of constituents in subsurface soil are below Tier 1 PCLs for commercial/industrial land use (on site) and for residential land use (off site).*

Gulf Chemical & Metallurgical Corporation is an operating facility with health and safety procedures to reduce the potential for exposure to workers, so:

- *No Residents are present*
- *No Day Care is present*
- *There is no direct or indirect food receptor (facility and adjacent property are not used for agricultural or food related activities).*
- *Trespassers are controlled through security measures*
- *There is no recreation in surface soil near the SWMUs*
- *On-site and Construction Worker exposure to soil (surface and subsurface) is controlled because the following measures are required:*
 - *Safety training;*
 - *Personal Protective Equipment (PPE); and*
 - *Work permit.*

³ *Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)*

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- 4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be "**significant**"⁴ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

N/A If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant".

N/A If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant".

N/A If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

N/A

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5 Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

N/A If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

N/A If no (there are current exposures that can be reasonably expected to be "unacceptable") - continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

N/A If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

N/A

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Final Note: The purpose of the Human Exposures EI is to qualitatively screen exposures based on current land and groundwater use. A "YE" determination does not constitute a screening tool that ends the corrective action process. The "YE" determination may be changed at any time as new information becomes available.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

 X YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Gulf Chemical & Metallurgical facility, EPA ID# TX0074195678, located at 302 Midway Road, Freeport, Texas under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

 NO - "Current Human Exposures" are NOT "Under Control".

 IN - More information is needed to make a determination.

Completed by

(signature) *C. Todd Counter*
(print) C. Todd Counter
(title) Project Manager, TCEQ

Date: June 25, 2004

Supervisor

(signature) *Cathy Remmert*
(print) Cathy Remmert
(title) Team II Leader, TCEQ

Date: June ²⁹ 2004

Locations where References may be found:

TCEQ Central Records, Austin, Texas

Contact telephone and e-mail numbers

Project Manger listed above
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Final Note: The purpose of the Human Exposures EI is to qualitatively screen exposures b: land and groundwater use. A "YE" determination does not constitute a screening tool that corrective action process. The "YE" determination may be changed at any time as new info available.

Fax Transmittal Memo		# of Pages
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